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10/047,154	10/22/2001	Manabu Sasaki	16869P-030200US	4829

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EXAMINER

AGUSTIN, PETER VINCENT

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/047,154

Applicant(s)

SASAKI ET AL.

Examiner

Peter Vincent M Agustin

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8, 10-14, 17-21, 23, 24, 26 and 28 is/are rejected.
- 7) ☒ Claim(s) 4, 7, 9, 15, 16, 22, 25 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 1 & 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. Claim 27 objected to because of the following informality: On line 2, "principle" should be --principal--. Appropriate correction is required.
4. Claim 9 objected to because it recites the limitation "said principal device", which should be --said principal unit--. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 8, 10, 13, 14, 18-21, 26 & 28 rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe (US 5,394,387).

In regard to claim 1, Watanabe discloses an apparatus (figure 1) for reproducing information from a storage medium (1) comprising: a motor unit (2) operable to rotate said storage medium at any one of a plurality of rotational speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); and a data control unit (8) operatively coupled to said motor unit and operable with said storage medium for accessing information contained on said storage medium; said data control unit configured to receive size-indicating information relating to an amount of data to be reproduced (column 6, lines 51-55), said data control unit configured to receive a request for a read operation (column 6, lines 47-51) and, in response to said request, to control said motor unit to rotate said storage medium at one of said rotational speeds depending on said size-indicating information.

In regard to claim 2, Watanabe discloses that said data control unit is further configured to control said motor unit to operate at a first rotational speed (figure 7, 2400 rpm) if said size-indicating information indicates a data size that is less than a predetermined value (column 7, lines 24-31) and to operate at a second rotational speed (figure 8, 3000 rpm) if said size-indicating information indicates a data size that is greater than or equal to said predetermined value (column 7, lines 15-20), said first rotational speed being less than said second rotational speed (2400 rpm < 3000 rpm).

In regard to claim 8, Watanabe discloses that said data control unit is further configured to: access said storage medium to receive said size-indicating information

(as noted on claim 1 rejection above); to transmit said size-indicating information to a principal unit (inherent); and to receive said size-indicating information from said principal unit in connection with said request for a read operation (inherent). It should be noted that the presence of a principal unit for transmitting/receiving said size-indicating information is inherently disclosed. It is well-known in the art that any data processing device, i.e., the data control unit (8), includes a memory, buffer, or any similar device which is capable of temporarily storing information for fast retrieval and processing.

In regard to claim 10, Watanabe discloses an apparatus (figure 1) for recording information onto a storage medium (1) comprising: a motor unit (2) operable to rotate said storage medium at any one of a plurality of rotational speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); and a data control unit (8) operatively coupled to said motor unit and operable with said storage medium for recording information onto said storage medium, said data control unit configured to receive size-indicating information relating to an amount of data to be recorded onto said storage medium (column 6, lines 51-55), said data control unit configured to receive a request for a write operation (column 6, lines 47-51) and in response thereto to control said motor unit to rotate said storage medium at one of said rotational speeds depending on said size-indicating information.

In regard to claim 13, Watanabe discloses that said data control unit is further configured to access size-indicating information (as noted on claim 1 rejection above) stored on said storage medium relating to an amount of data to be reproduced and to transmit said size-indicating information to a principal unit (inherent: see claim 8

rejection above), said data control unit being further configured to receive said size-indicating information from said principal unit in connection with a request for a read operation (inherent: see claim 8 rejection above) and to rotate said storage medium at a rotational speed based on said size-indicating information (as noted on claim 1 rejection above).

In regard to claim 14, Watanabe discloses that said data control unit is further configured to control said motor unit to operate at a first rotational speed (figure 7, 2400 rpm) if said size-indicating information indicates a data size that is less than a predetermined value (column 7, lines 24-31) and to operate at a second rotational speed (figure 8, 3000 rpm) greater than said first rotational speed (3000 rpm > 2400 rpm) if said size-indicating information indicates a data size that is greater than or equal to said predetermined value (column 7, lines 15-20).

In regard to claim 18, Watanabe discloses an apparatus (figure 1) for reproducing information from a storage medium (1) comprising: rotation means (2) for rotating said storage medium at one of a number of predetermined rotation speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); read means (10) for reading information from said storage medium; and controller means (8) operatively coupled to said read means and to said rotation means for performing read operations of data from said storage medium, said controller means operable to obtain information indicative of a data size (column 6, lines 51-55), said controller means operable for receiving a request of a read operation (column 6, lines 47-51), in response to said read

operation, said rotation means rotating said storage medium at one of said predetermined rotation speeds based on said information.

In regard to claim 19, Watanabe discloses an apparatus (figure 1) for recording information onto a storage medium (1) comprising: rotation means (2) for rotating said storage medium at one of a number of predetermined rotation speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); write means (10) for recording information from said storage medium; and controller means (8) operatively coupled to said write means and to said rotation means for performing write operations of data onto said storage medium, said controller means operable to obtain information indicative of a data size (column 6, lines 51-55), said controller means operable for receiving a request of a write operation (column 6, lines 47-51), in response to said write operation, said rotation means rotating said storage medium at one of said predetermined rotation speeds based on said information.

In regard to claim 20, Watanabe discloses a method for reproducing information from a rotatable storage medium (figure 1, element 1) comprising: receiving a read operation request (column 6, lines 47-51); receiving size-indicating information (column 6, lines 51-55) relating to an amount of data to be reproduced from said rotatable storage medium; rotating said rotatable storage medium at one of a number of predetermined rotation speeds based on said size-indicating information (elements 2, 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); and reproducing said data from said rotatable storage medium.

In regard to claim 21, Watanabe discloses the steps of rotating said rotatable storage medium at a first rotational speed (figure 7, 2400 rpm) if said size-indicating information indicates a data size that is less than a predetermined value (column 7, lines 24-31) and rotating said rotatable storage medium at a second rotational speed (figure 8, 3000 rpm) if said size-indicating information indicates a data size that is greater than or equal to said predetermined value (column 7, lines 15-20), said first rotational speed being less than said second rotational speed (2400 rpm < 3000 rpm).

In regard to claim 26, Watanabe discloses the steps of obtaining said size-indicating information from said rotatable storage medium (as noted on claim 1 rejection above) and transferring it to a principal unit (inherent: see claim 8 rejection above), receiving said read operation request from said principal unit, said read operation request including said size-indicating information (inherent: see claim 8 rejection above).

In regard to claim 28, Watanabe discloses a method for recording information onto a storage medium (figure 1, element 1) comprising: receiving a write operation request (column 6, lines 47-51), said write operation request including data to be written; receiving size-indicating information (column 6, lines 51-55) indicative of the amount of data to be written; and recording said data to be written including rotating said storage medium at one of a number of predetermined rotation speeds based on said size-indicating information (see elements 2, 3 & 6; column 5, lines 59-63; and column 6, lines 2-5).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3, 5, 6, 11, 12, 17, 23, 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Lin (US 5,673,242).

In regard to claim 3, for a description of Watanabe, see claims 1 & 2 rejections above. Watanabe, however, does not disclose that said second rotational speed is a maximum rotational speed.

Lin discloses that the motor is initially spun at the nominal speed, i.e., the maximum rotational speed, unless a data access operation occurs, in which case the speed is decreased. Therefore, it is inherent that spinning at a maximum rotational speed is a desirable characteristic. It is well-known in the art that spinning a disc at a maximum rotational speed increases data transfer reliability and overall recording/reproduction performance. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to set the second rotational speed of Watanabe to the maximum rotational speed, as suggested by Lin. The motivation would have been to increase data transfer reliability and overall recording/reproduction performance.

In regard to claim 5, for a description of Watanabe, see claim 1 rejection above. Furthermore, Watanabe discloses in column 8, lines 13-44 that said data control unit is

further configured to detect a number of successive read operations, and to operate said motor unit at a rotational speed (column 8, lines 36-37: 3000 rpm) based on the number of said successive read operations detected (see also figures 3, 4 & 9). It should be noted that the function of detecting a number of successive read operations is similar to "the frequency with which seeking and recording/reproduction are executed to the zone B" (column 8, lines 34-35). On the other hand, the function of not detecting a number of successive read operations is similar to the opposite case, i.e., when seeking and recording/reproduction are executed to the zone A instead of the zone B. For instance, on the embodiment shown on figure 4, when it is detected that a seeking operation on zone B has reached ten times, the spindle motor is rotated at the faster speed; otherwise, the speed of the spindle motor is maintained. Watanabe, however, does not disclose that each read operation occurs within a predetermined period of time of a preceding read operation. Furthermore, in regard to claim 6, Watanabe does not disclose that said data control unit is further configured to operate said motor unit at a maximum rotational speed if a predetermined number of successive read operations is detected.

Lin discloses on figure 2 (see also column 3, lines 24-39) a step (22) of determining whether a read operation occurs within a predetermined period of time ($\Delta T1$), in order to decide whether to maintain a nominal speed for the motor (21), or to reduce the speed by $\frac{1}{2}$ (23). Lin also discloses that the motor unit is operated at a maximum rotational speed (step 21: nominal speed). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have limited the

detected number of successive read operations of Watanabe to occur within a predetermined period of time of a preceding read operation as suggested by Lin, the motivation being to efficiently control the motor rotation speed, thereby reducing power consumption. Furthermore, it would have been obvious to operate the motor unit at a maximum rotational speed, the motivation being to maintain an optimum data transfer rate.

In regard to claim 11, Watanabe discloses an apparatus (figure 1) for reproducing information from a storage medium (1) comprising: a motor unit (2) operable to rotate a storage medium at any one of a plurality of rotational speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); and a data control unit (8) operatively coupled to said motor unit and operable with said storage medium for reproducing information from said storage medium, said data control unit configured to detect a number of successive read operations (column 8, lines 13-44; and figures 3, 4 & 9), and to rotate said storage medium at a rotational speed (column 8, lines 36-37: 3000 rpm) based on the number of said successive read operations (see notes for claim 5 rejection above). Watanabe, however, does not disclose that each read operation occurs within a predetermined period of time of a preceding read operation. Furthermore, in regard to claim 12, Watanabe does not disclose that said data control unit is further configured to control said motor unit at a maximum rotational speed if a predetermined number of successive read operations is detected.

Lin discloses on figure 2 (see also column 3, lines 24-39) a step (22) of determining whether a read operation occurs within a predetermined period of time

(ΔT_1), in order to decide whether to maintain a nominal speed for the motor (21), or to reduce the speed by $\frac{1}{2}$ (23). Lin also discloses that the motor unit is controlled at a maximum rotational speed (step 21: nominal speed). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have limited the detected number of successive read operations of Watanabe to occur within a predetermined period of time of a preceding read operation as suggested by Lin, the motivation being to efficiently control the motor rotation speed, thereby reducing power consumption. Furthermore, it would have been obvious to control the motor unit at a maximum rotational speed, the motivation being to maintain an optimum data transfer rate.

In regard to claim 17, Watanabe discloses an apparatus (figure 1) for recording information onto a storage medium (1) comprising: a motor unit (2) operable to rotate a storage medium at any one of a plurality of rotational speeds (see also elements 3 & 6; column 5, lines 59-63; and column 6, lines 2-5); and a data control unit (8) operatively coupled to said motor unit and operable with said storage medium for recording information onto said storage medium, said data control unit configured to detect a number of successive write operations (column 8, lines 13-44; and figures 3, 4 & 9), and to rotate said storage medium at a rotational speed (column 8, lines 36-37: 3000 rpm) based on the number of said successive write operations (see notes for claim 5 rejection above). Watanabe, however, does not disclose that each write operation occurs within a predetermined period of time of a preceding write operation.

Lin discloses on figure 2 (see also column 3, lines 24-39) a step (22) of determining whether a write operation occurs within a predetermined period of time ($\Delta T1$), in order to decide whether to maintain a nominal speed for the motor (21), or to reduce the speed by $\frac{1}{2}$ (23). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have limited the detected number of successive write operations of Watanabe to occur within a predetermined period of time of a preceding write operation as suggested by Lin, the motivation being to efficiently control the motor rotation speed, thereby reducing power consumption.

In regard to claim 23, for a description of Watanabe, see claim 20 rejection above. Furthermore, Watanabe discloses the steps of detecting a number of successive read operations (column 8, lines 13-44; figures 3, 4 & 9), and rotating said rotatable storage medium at a rotational speed (column 8, lines 36-37: 3000 rpm) based on the number of said successive read operations detected (see notes for claim 5 rejection above). Watanabe, however, does not disclose that each read operation occurs within a predetermined period of time of a preceding one of said read operations. Furthermore, in regard to claim 24, Watanabe does not disclose the step of rotating said rotatable storage medium at a maximum rotational speed if a predetermined number of successive read operations is detected.

Lin discloses on figure 2 (see also column 3, lines 24-39) a step (22) of determining whether a read operation occurs within a predetermined period of time ($\Delta T1$), in order to decide whether to maintain a nominal speed for the motor (21), or to reduce the speed by $\frac{1}{2}$ (23). Lin also discloses that the motor unit is operated at a

maximum rotational speed (step 21: nominal speed). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have limited the detected number of successive read operations of Watanabe to occur within a predetermined period of time of a preceding read operation as suggested by Lin, the motivation being to efficiently control the motor rotation speed, thereby reducing power consumption. Furthermore, it would have been obvious to rotate the motor unit at a maximum rotational speed, the motivation being to maintain an optimum data transfer rate.

Allowable Subject Matter

9. Claims 4, 7, 9, 15, 16, 22, 25 & 27 objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

In regard to claims 4, 15 & 22, no prior art of record alone or in combination discloses an apparatus (or method) including a motor unit, data control unit and further including a data control unit configured to control the motor unit to operate at a first rotational speed if data size is less than or equal to a first value and to operate at a second rotational speed if data size is greater than said first value and less than or equal to a second value, said first rotational speed being less than said second rotational speed, said second rotational speed being less than a maximum rotational

speed, said control unit being configured in such a way in order to provide a broader range for the amount of data that can be transferred using a certain rotation speed.

In regard to claims 7, 9, 16, 25 & 27, no prior art of record alone or in combination discloses an apparatus (or method) having a motor unit, data control unit, and further including a data control unit configured for data transfer operations wherein each data transfer operation includes an amount of data equal to a maximum data size, and in response to a read request for an amount of data greater than said maximum data size, said data control unit being operable to transfer said amount of data in two or more data transfer operations, each data transfer operation of a data size less than or equal to said maximum data size, said data control unit being configured in such a way in order to break oversized data into two or more smaller pieces of data, to prevent data overflow which can lead to reading/writing errors.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Itoh et al. (US 5,243,587) discloses a disc playing apparatus which can access a desired track at a high speed without losing the advantage of large recording capacity. During recording, a read stop signal is generated when it is detected that a residual amount of data exceeds a predetermined amount.

Aoshima (US 5,663,941) discloses an optical disk recording device with laser power control capable of recording at various recording speeds.

Jin (US 6,414,924) discloses an apparatus wherein the rotation speed is varied depending on the type of disk.

Kang (US 2002/0101807) discloses a method and apparatus for controlling high-speed rotation of an optical disc. This invention includes a timer for measuring the elapsed time between specific events and a microprocessor for controlling the rotation speed based on the elapsed time.

Lee (US 6,538,967) discloses a method and apparatus for controlling the reproduction speed of an optical disc, wherein the speed of reproduction is controlled by the RF signal, and detected disc conditions.

Kuo (US 6,600,708) discloses speed control of an optical disc player based on the duration of a control signal.


Kim (US 6,614,738) discloses an apparatus and method for controlling a reproduction speed of an optical disk based on a remaining battery energy.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is (703) 305-8980. The examiner can normally be reached on Monday thru Friday 9AM -5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PVA
03/04/2004



W. R. YOUNG
PRIMARY EXAMINER